6100

COMPREHENSIVE LEGACY MANAGEMENT AND INSTITUTIONAL CONTROLS PLAN

VOLUME I AND II

FERNALD CLOSURE PROJECT
FERNALD, OHIO

JANUARY 2006

U.S. DEPARTMENT OF ENERGY

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6100

RESPONSES TO U.S. AND OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE REVISED COMPREHENSIVE LEGACY MANAGEMENT AND INSTITUTIONAL CONTROLS PLAN, VOLUMES I AND II DRAFT FINAL, REVISION D SEPTEMBER 2005

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FERNALD CLOSURE PROJECT

SPECIFIC COMMENTS ON LEGACY MANAGEMENT PLAN (VOLUME I)

1. Commenting Organization: U.S. EPA Commentor: Saric
Section #: Executive Summary Page #: NA Line #: NA Code: C
Original Specific Comment #: 1
Comment: The text states that the final Comprehensive Legacy Management and Institutional Control Plan (LMICP) will be submitted to the U.S. Environmental Protection Agency (U.S. EPA) and Ohio Environmental Protection Agency (OEPA in January 2006. Several issues raised by U.S. EPA and OEPA in their comments on the July 2004 and April 2005 versions of the LMICP were deferred by the U.S. Department of Energy (DOE) until submittal of the January 2006 version of the LMICP because details (such as support plans, the Multi-Use Education Facility [MUEF], and the final use of the site) have not be finalized. DOE agrees in its response dated August 18, 2005, that it will highlight LMICP text that it knows will change to expedite regulatory agency review. However, these sections of text have not been highlighted. Text that DOE knows will require future revisions should be highlighted in the next version of the LMICP.
Response: DOE agrees that a commitment was made to highlight text in the last version of the LMICP. It was an oversight that the text in the September 2005 version was not highlighted. The Final version of the LMICP resolves outstanding issues with the exception of those tied to the natural resource settlement rather than highlighting parts of the text, DOE prefers to identify sections of the LMICP that will require update in an attached table.
Action: A table is attached to this comment response document that lists the areas of text that will require future revision once settlement is reached.

2. Commenting Organization: U.S. EPA Commentor: Saric
Section #: 6.0 Page #: 33 Line #: NA Code: C
Original Specific Comment #: 2
Comment: Section 6.0 discusses the funding of legacy management activities over the next 7 years and refers to a cost estimate in Appendix A. The text should be revised to discuss whether costs for the MUEF are included in the cost estimate.
Response: The cost estimate for legacy management has been refined to include the refurbishment and operation of the MUEF. The total dollar value of the refined estimate is consistent with the estimate contained in the Final LMICP. The breakdown of the costs within the estimate has been refined to ensure adequate funding is available for the MUEF. Refurbishment of the facility is expected to be complete in 2007.
Action: No action required.

SPECIFIC COMMENTS ON INSTITUTIONAL CONTROL PLAN (VOLUME II)

3. Commenting Organization: U.S. EPA Commentor: Saric
Section #: Executive Summary Page #: NA Line #: NA Code: C
Original Specific Comment #: 1
Comment: The text states that the final LMICP will be submitted to U.S. EPA and OEPA in January 2006. Several issues raised by U.S. EPA and OEPA in their comments on the July 2004 and April 2005 versions of the LMICP were deferred by the DOE until submittal of the January 2006 version of the LMICP because details (such as support plans, the MUEF, and the final use of the site) have

not been finalized. DOE agrees in its response dated August 18, 2005, that it will highlight LMICP text that it knows will change to expedite regulatory agency review. However, these sections of text have not been highlighted. Text that DOE knows will require future revisions should be highlighted in the next version of the LMICP.

Response: See Response #1.

Action: See Action #1.

4. Commenting Organization: U.S. EPA Commentor: Saric

Attachment #: E Page #: 2 Line #: NA Code: C

Original Specific Comment #: 2

Comment: The community involvement plan (CIP) provides a very brief discussion of the site's description and background. The text should be revised to discuss site soil and groundwater contaminants, cleanup goals, cleanup and restoration activities, on-site waste disposal, off-site waste disposal, and air and radiation monitoring results.

Response: DOE agrees with the comment.

Action: CIP text has been revised to include the additional information requested.

5. Commenting Organization: U.S. EPA Commentor: Saric

Attachment #: E Page #: 7 Line #: NA Code: C

Original Specific Comment #: 3

Comment: The CIP discusses roles and responsibilities. The text should be revised to discuss the roles and responsibilities of the community involvement coordinator, who will interface with the community and various agencies involved with the site.

Response: DOE agrees with the comment.

Action: CIP text has been revised to include the information requested.

RESPONSES TO OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE REVISED COMPREHENSIVE LEGACY MANAGEMENT AND INSTITUTIONAL CONTROLS PLAN, VOLUME II, ATTACHMENT C, GROUNDWATER/LEAK DETECTION AND LEACHATE MONITORING PLAN, ON-SITE DISPOSAL FACILITY, DRAFT FINAL, REVISION C, APRIL 15, 2005

ORIGINAL COMMENTS

6. Commenting Organization: Ohio EPA — Commentor: GeoTrans, Inc.
Section: 3.2.1.2 — Page #: 3-4 — Line #: 26 — Code: C
Original Comment #: 109
Comment: That DOE has selected the intra-well approach for the evaluation of the OSDF groundwater/leak detection monitoring data is not at issue. What is at issue is DOE's statement that "the preferred method of evaluation for the OSDF groundwater/leak detection monitoring data is an intra-well trend analysis following the establishment of background (baseline) conditions in the perched water and Great Miami Aquifer beneath the OSDF." Although a trend analysis will be an important component of the process used to establish baseline concentrations, trend analysis alone by itself will not be appropriate for evaluating the OSDF groundwater/leak detection monitoring data for detection monitoring purposes. A statistically defined limit such as a prediction limit or control chart limit will be needed for evaluating the post-baseline data. The cited language in the text should be revised accordingly.
Response: DOE acknowledges the comment and the following text in Section 3.2.1.2 will be updated: "The method of evaluation for the OSDF groundwater/leak detection monitoring data is an intra-well trend analysis prior to the establishment of background (baseline) conditions in the perched water and Great Miami Aquifer beneath the OSDF. Statistically significant evidence of an upward trend would warrant further technical review, as necessary.
Action: Text in the OSDF GWLMP will be updated as indicated in the comment response.

7. Commenting Organization: Ohio EPA — Commentor: GeoTrans, Inc.
Section: 4.4.3.2 — Pg#: 4-27 — Line#: 23 — Code: C
Original Comment#: 113
Comment: The comment response refers to Table 4-45 in the OU5 RI. This table lists the major constituents only. No organic compounds are shown in the table. Table E-1.1 from Appendix E of the OU5 RI provides a more complete summary of site constituents.
Response: DOE acknowledges that the previous response should have provided additional information. Table 4-45 of the Operable Unit 5 RI contains summary information from Table E-1.1. If concentrations of organic constituents have been detected in the annual LCS sample then they have been acknowledged and reviewed against laboratory contract required detection limits, the existence of blank contamination, etc. and this information has been provided in the annual site environmental reports. In evaluating the annual leachate concentrations (Appendix I constituents), comparison to concentrations identified in the Operable Unit 5 RI, Table 4-45 is the beginning of the process.
Action: No action required.

8. Commenting Organization: Ohio EPA — Commentor: GeoTrans, Inc.
Section: 4.4.3.2 — Pg#: 4-27 — Line#: 23 — Code: C
Original Comment#: 114
Comment: Requiring that the annual Appendix I LCS concentration for a constituent must exceed the all time maximum of that constituent observed in perched groundwater is inappropriate for use as the threshold criteria for considering the parameter for use as a leak detection constituent. The approach bases the decision on the pre-excavation monitoring data for the material that is placed in the OSDF. It is unlikely that any constituent, even the leak detection constituents already in routine use, would be detected in the LCS at concentrations exceeding the upper bound observed

in pre-excavation perched groundwater. A more meaningful approach is to compare, for each of the four monitored horizons, the post baseline results for the 18 leak detection parameters against the baseline data set for each parameter. The comparison would be a statistical test to check for a potential difference between the baseline and post-baseline concentration samples. The F Test could be used for this purpose. For constituents that do not exhibit trend and or a significant difference between baseline and post baseline concentrations, the post baseline data may be incorporated into the baseline data set for future comparisons. For a given constituent and monitoring horizon that exhibits a significant difference, quarterly monitoring will be conducted to assess the viability of the constituent as a leak detection parameter. If a new parameter thus becomes established, the judgment to expand monitoring for the parameter to the next lower horizon will be based on the verification and routine annual sampling results.

Response: The difficulty of assessing many of annual leachate concentrations (Appendix I constituents) is the fact that, for the most part, they are seldom detected and the majority of the 84 constituents sampled during the annual event are not sampled in the other horizons. Test procedures such as the F Test would not be appropriate since the vast majority of results are non-detects. DOE acknowledges that the use of the all time maximum observed pre-excavation result in the perched groundwater may not be sufficiently conservative for comparison purposes but as indicated in Comment Response #7, comparison to the maximum perched water result is only one part of the process.

Action: The OSDF GWLMP text in Sections 3 and 5 and Appendix E will be updated as follows:

" Although constituents that are not part of the limited indicator parameter list for leak detection may be detected in the annual grab sample, it is not anticipated that the concentrations will be high enough to warrant revision of the leak detection parameter list. However, a review of the data will be conducted (and reported through the annual site environmental reports) to determine if any new indicator constituents should be added to the site-specific leak detection indicator parameter list. Constituent concentrations will be reviewed against information gathered during the Operable Unit 5 RI/FS period and subsequent environmental monitoring data. OSDF annual LCS data will be compared to factors such as Great Miami Aquifer and perched water background values, range of site perched water concentrations, and current laboratory contract required detection limits. Ultimately, a constituent will be added if routine analysis of the constituent can significantly enhance early detection capability. The leak detection/leachate analysis will ensure that the character of the leachate will not adversely impact the treatment facility or the treatment facility effluent receiving stream (the Great Miami River)."

SECTIONS OF THE LMICP THAT REQUIRE FINALIZATION OR FUTURE UPDATING

Volume I

Subject	Section	Page	Paragraph
Public use amenities	2.3.1	14	First
Public use amenities	3.0	24	First

Volume II

Subject	Section	Page	Paragraph
Environmental Covenant-status	2.1.2	11	Last

Department of Energy

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JAN 31 2006

DOE-0063-06

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Dear Mr. Saric:

TRANSMITTAL OF RESPONSES TO U.S. AND OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE LEGACY MANAGEMENT AND INSTITUTIONAL CONTROLS PLAN, DRAFT FINAL, REVISION D, AND FINAL COMPREHENSIVE LEGACY MANAGEMENT AND INSTITUTIONAL CONTROLS PLAN

References:

1) Letter, J. Reising to T. Schneider, J. Saric and B. Kurey, "Transmittal of the Revised Comprehensive Legacy Management (Volume I) and Institutional Controls Plan (Volume II), Integrated Environmental Monitoring Plan, Final, Revision 4a (IEMP) (Attachment D) and Community Involvement Plan (CIP) (Attachment E)," Draft Final, dated September 28, 2005

2) Letter, T. Schneider to W. Taylor, "U.S. EPA Comments on the Draft Final Legacy Management and Institutional Controls Plan," Revision D, dated November 1, 2005

3) E-Mail, T. Schneider to B. Hertel, "Ohio EPA Comments on the Comprehensive Legacy Management and Institutional Controls Plan, Volume II, Attachment C, Groundwater/Leak Detection and Leachate Monitoring Plan, On-Site Disposal Facility, April 2005, 20100-PL-009," Final, Revision 1, Draft, dated November 8, 2005

4) Letter, J. Reising to T. Schneider and J. Saric, "Transmittal of the Revised Comprehensive Legacy Management and Institutional Controls Plan", dated April 14, 2005

This letter transmits the Final version of the Comprehensive Legacy Management and Institutional Controls Plan (LMICP). The LMICP will be used by the Department of Energy (DOE) Office of Legacy Management to manage site activities after physical completion of the Fernald site cleanup. The Office of Legacy Management has been working closely with the DOE Office of Environmental Management (EM) and Fluor Fernald, Inc., to develop the LMICP. The Office of Legacy Management is currently scheduled to take over management of the site in the summer/fall of 2006.

All support plans that are included with the LMICP have been updated and are included in this Final version. This transmittal also includes responses to the U.S. Environmental Protection Agency (EPA) and Ohio EPA comments. Ohio EPA comments were received on the support plans issued with the April version of the LMICP. U.S. EPA comments were received on the September version and the responses are provided.

DOE-EM is proposing to update the LMICP on an annual basis the first two years after physical completion. Assuming all significant issues have been resolved, DOE requests concurrence on addressing any remaining issues on the LMICP in January 2007.

If you have any questions or require additional information, please contact me at (513) 648-3139.

Sincerely,

Johnny W. Reising
Director

Enclosures: As Stated

G. Stegner, DOE-OH/FCP
C. Jacobson, Stoller
M. Lutz, Stoller
J. Powell, DOE-LM/FCP
M. Cullerton, Tetra Tech
M. Murphy, USEPA-V, A-18J
G. Jablonowski, USEPA-V, SR-6J
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T. Schneider, OEPA
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H. Bilson, Fluor Fernald, Inc., MS01
J. Chiou, Fluor Fernald, Inc., MS88
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C. Tabor, Fluor Fernald, Inc., MS12
S. Walpole, Fluor Fernald, Inc., MS76
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VOLUME I

LEGACY MANAGEMENT PLAN

JANUARY 2006

U.S. DEPARTMENT OF ENERGY

Revision 0
Final

Emergency Contact

Grand Junction 24-hour
Monitored Security Telephone Number

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EXECUTIVE SUMMARY

This Comprehensive Legacy Management and Institutional Controls Plan (LMICP) was developed to document the planning process and the requirements for the long-term care, or legacy management, of the Fernald site. The LMICP is a two-volume document with supporting documents included as attachments to Volume II. Volume I provides the planning details for the management of the Fernald site that go beyond those identified as institutional controls in Volume II. Primarily, Volume II is a requirement of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), providing institutional controls that will ensure the cleanup remedies implemented at the Fernald site will protect public health and the environment. The format and content of Volume II follows U.S. Environmental Protection Agency (EPA) requirements for institutional controls. Once approved, Volume II becomes enforceable under CERCLA authority.

Volume I is the Legacy Management Plan. This plan is not a required document under the CERCLA process; it is not a legally enforceable document, but provides the Department of Energy (DOE) Office of Legacy Management's management plan for maintenance of the Fernald site as a commitment from DOE to carefully maintain the Fernald site following closure. The plan discusses how the DOE, specifically the Office of Legacy Management, will approach legacy management of the Fernald site. It describes the surveillance and maintenance of the entire site, including the on-site disposal facility (OSDF). It explains how the public will continue to participate in the future of the Fernald site. Also included in the Legacy Management Plan is a discussion of records and information management. The plan ends with a discussion on funding for legacy management of the site and includes an estimate of costs through fiscal year 2012.

Volume II is the Institutional Controls Plan (IC Plan). The IC Plan is required under the CERCLA remediation process when a physical remedy does not allow for full, unrestricted use or when hazardous materials are left on site. The plan is a legally enforceable CERCLA document and part of the remedy for the site (a requirement of the U.S. EPA). The plan outlines the institutional controls that are established and enforced for the entire site, including the OSDF, to ensure continued protection of human health and the environment following completion of the remedy. The IC Plan has five attachments that lend support and provide details regarding the established institutional controls. The attachments provide further detail on the continuing groundwater remediation (pump and treat) system (Attachment A); the OSDF cap and cover system (Attachment B); the leak detection and leachate management systems for the OSDF (Attachment C); and the environmental monitoring that will continue following closure (Attachment D). All of these attachments were used during remediation, and all of them will be adhered to post-closure. Also attached to Volume II is the Community Involvement Plan (CIP) (Attachment E), a CERCLA required document, developed by DOE. The CIP explains in detail how the public will continue to participate in the future of the Fernald site.

DOE has tried to make this LMICP as comprehensive as possible, with all necessary information contained in this one document. The final LMICP was submitted to the U.S. EPA and Ohio Environmental Protection Agency (OEPA) in January 2006. DOE proposes that this LMCIP be reviewed on an annual basis until the next CERCLA five-year review to determine if revisions are required. The LMICP will also be reviewed every five years in conjunction with the CERCLA five-year reviews.

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LIST OF ACRONYMS

AEC	Atomic Energy Commission
AWWT	advanced wastewater treatment facility
CAWWT	converted advanced waste water treatment facility
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIP	Community Involvement Plan
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FCAB	Fernald Citizens Advisory Board
FCP	Fernald Closure Project
FEMP	Fernald Environmental Management Project
FFCA	Federal Facilities Compliance Agreement
FMPC	Feed Materials Production Center
FRESH	Fernald Residents for Environmental Safety and Health
FRL	final remediation level
GEMS	Geospacial Environmental Mapping System
GWLMP	Groundwater/Leak Detection and Leachate Monitoring Plan
IC Plan	Institutional Controls Plan
IEMP	Integrated Environmental Monitoring Plan
LCS	leachate collection system
LDS	leak detection system
LMICP	Comprehensive Legacy Management and Institutional Controls Plan
MUEF	Multi-use Educational Facility
NARA	National Archives and Records Administration
NDAA	National Defense Authorization Act
NEPA	National Environmental Protection Act
NRDA	Natural Resource Damage Assessment
NRRP	Natural Resources Restoration Plan
OEPA	Ohio Environmental Protection Agency
OMMP	Operations and Maintenance Master Plan
OSDF	on-site disposal facility
OU	operable unit
PCCIP	Post-Closure Care and Inspection Plan
PDF	portable document file

LIST OF ACRONYMS
(Continued)

ppb	parts per billion
RCRA	Resource Conservation and Recovery Act
RI/FS	remedial investigation/feasibility study
ROD	record of decision
SEP	Site-wide Excavation Plan
UF_4	uranium tetrafluoride
UNH	uranyl nitrate hexahydrate
UO_3	uranium trioxide
WAC	waste acceptance criteria

1.0 INTRODUCTION

Legacy management is required at the Fernald site to ensure that the remedial actions implemented at the site continue to be effective and protective of human health and the environment following site closure. This Comprehensive Legacy Management and Institutional Controls Plan (LMICP) outlines the Department of Energy's (DOE's) approach to and documents the requirements for long-term care of the Fernald site. It is DOE's intent to continue to review and refine the LMICP with the involvement of stakeholders and regulators to ensure that legacy management activities are meeting stakeholder and regulatory requirements. DOE proposes to review the LMICP on an annual basis, until the next CERCLA five-year review, to determine if revisions are required. All revisions will be subject to Regulatory Agency review and will be made available to the stakeholders. The IC Plan will also be reviewed every five years in conjunction with the CERCLA five-year review and revisions will be made as needed. Revisions can always be made on an as-needed basis, if the results of site and OSDF inspections and monitoring require them. The term "legacy management" is used throughout this LMICP and is intended to encompass all activities (formerly referred to as "stewardship" activities) as defined in DOE policy and guidance.

The Office of Legacy Management was formally established as a new U.S. DOE element on December 15, 2003. This Office is responsible for ensuring that DOE's post-closure responsibilities are met, and for providing DOE programs for long-term surveillance and maintenance, records management, work force restructuring and benefits continuity, property management, land use planning and community assistance. Additional information regarding the Office of Legacy Management can be found at www.lm.doe.gov.

DOE policy and guidance clearly identify protectiveness of the remedies carried out at the Fernald site (e.g., groundwater, on-site disposal facility [OSDF], institutional controls) as the top priority for legacy management. Specifically, the OSDF requires regular monitoring and maintenance to ensure its integrity and performance. The restored areas of the site also require monitoring to ensure applicable laws and regulations are followed. Departmental policy and funding priorities regarding legacy management emphasize supporting the remedies as described in Fernald's records of decision (RODs).

1.1 PURPOSE AND ORGANIZATION OF THE LMICP

Developing the LMICP prior to the completion of remediation and site closure allowed for more stakeholder involvement and ensured a more efficient transition to legacy management. It was also necessary so that baseline scope, schedule, and projected costs could be developed and planned for in future legacy management budget allocations. In addition, the personnel most knowledgeable about the site remediation process were readily available as resources for the transition to legacy management. The LMICP provides an overview of the defined end-state, maintenance and monitoring requirements, as well as contingencies that are in place to address any changes made to the end-state.

The Fernald LMICP has been developed as a two-volume set. This first volume is the Legacy Management Plan. The Legacy Management Plan outlines DOE's approach to legacy management, including such issues as stakeholder involvement, records management, and funding.

The second volume, the Institutional Controls Plan (IC Plan), outlines the specific surveillance and maintenance requirements for the Fernald site. There are five support plans included in the LMICP as Attachments:

- Attachment A, The Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Project (OMMP) (DOE 2006c)
- Attachment B, The Post-Closure Care and Inspection Plan; On-site Disposal Facility (PCCIP) (DOE 2006d)
- Attachment C, The Groundwater/Leak Detection and Leachate Monitoring Plan (GWLMP) (DOE 2006a)
- Attachment D, The Integrated Environmental Monitoring Plan (IEMP) (DOE 2006b)
- Attachment E, The Community Involvement Plan (CIP) (DOE 2006e)

These support plans outline the operational requirements associated with the ongoing groundwater remedy (Attachment A); surveillance and maintenance requirements for the OSDF (Attachment B); surveillance and maintenance for the leachate and groundwater associated with the OSDF (Attachment C); the environmental monitoring requirements necessary to ensure completion and effectiveness of the remedies (Attachment D); and how DOE will continue to stay in communication with and involve the public in legacy management activities at the Fernald site (Attachment E).

DOE is required to conduct legacy management activities at facilities that have achieved completion of site remediation (refer to Section 1.2). The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires that institutional controls be part of selected remedies where land-use restrictions are placed on the property. The Fernald site remedies include use restriction, an undeveloped park, waste disposal (the OSDF), and continuing groundwater extraction and treatment. DOE has followed U.S. Environmental Protection Agency (U.S. EPA) guidance on institutional controls (refer to Section 1.2). Existing laws, regulations, policies, and directives provide broad requirements for DOE to conduct legacy management activities. These activities include monitoring, reporting, record keeping, and long-term surveillance and maintenance for various facilities and media, including engineered waste disposal units, and surface and groundwater.

Taking into consideration the current future use plans for the Fernald site, the scope of legacy management activities at the Fernald site falls into two categories: (1) operation and maintenance of the remedies, and (2) surveillance and maintenance in restored areas (areas outside of the OSDF). Legacy management activities related to the maintenance of the remedies includes monitoring and maintenance of the OSDF, the converted advanced wastewater treatment facility (CAWWT) and supporting infrastructure, the extraction wells and associated piping, and the active outfall line to the Great Miami River. The decontamination and dismantling of the aquifer remediation infrastructure (CAWWT, well system, etc.) is also included in legacy management activities. The PCCIP includes the details for the OSDF, and the OMMP includes the details of the monitoring and maintenance of the CAWWT, groundwater restoration systems, and the active outfall line. Legacy management activities covering both

categories also include ensuring that remedy-driven restrictions on access and use of the Fernald site are enforced, records management and education. Surveillance and maintenance in restored areas will focus on protecting natural and cultural resources in accordance with applicable laws and regulations.

The final LMICP was issued in January 2006, prior to site closure, and governs long-term surveillance and maintenance of the Fernald site (i.e., it will function as the Long-Term Surveillance and Maintenance Plan).

This Legacy Management Plan (Volume I) is organized into the following sections to describe planned legacy management activities at the Fernald site, as well as issues related to stewardship.

1.0 Introduction — provides an introduction to this plan and discusses the purpose and necessity of legacy management at DOE facilities.

2.0 Site Background — provides the history of the Fernald site beginning with construction of the site in the 1950s. There is a discussion of the production activities, the Fernald site's remediation, and the conditions at the time of site closure.

3.0 Scope of Legacy Management at the Fernald Site — discusses the scope of legacy management at the Fernald site, including management of site property, legacy management of the OSDF, and surveillance and maintenance of restored areas.

4.0 Oversight of Legacy Management at Fernald — describes the breakdown of responsibilities of legacy management activities at the Fernald site, including the Office of Legacy Management, contractors, regulators, the CERCLA five-year review, and reporting requirements.

5.0 Records Management — describes the importance of records management, preservation, and their applicability to legacy management. This section also describes various avenues for record management during legacy management.

6.0 Funding — discusses the funding needed to implement and sustain a legacy management program at the Fernald site. The Summary Legacy Management Budget Estimate is included in Appendix A.

1.2 PURPOSE OF LEGACY MANAGEMENT

In recent years, DOE has increased focus on the need for legacy management following completion of remediation activities. DOE orders and policies that provide the framework for legacy management include the documents listed below. The term "stewardship" is used in the following descriptions. When these documents were prepared, the term "stewardship" was used instead of "legacy management." As stated above, both terms are used in this Legacy Management Plan and refer to the same process.

- DOE Order 450.1, Environmental Protection Program (DOE 2005), requires the implementation of sound stewardship practices that are protective of the air, water, land, and other natural and cultural resources affected by DOE operations.
- DOE Order 200.1, Information Management Program (DOE 1996b), provides a framework for managing information, information resources, and information technology investment.
- DOE Order 430.1, Life Cycle Asset Management (DOE 1995b), and DOE Order 4320.1B, Site Development Planning (DOE1992b), identify the analyses that must be conducted in order to determine whether a particular portion of DOE real property is considered to be excess and available for transfer to another entity.

- DOE Order 435.1, Radioactive Waste Management (DOE 2001a), requires DOE radioactive waste management activities to be systematically planned, documented, executed, and evaluated in a manner that protects workers and the public as well as the environment.

- DOE Order 1230.2, American Indian Tribal Government Policy (DOE 1992a), requires DOE sites to consult with potentially affected tribes concerning effects of proposed DOE actions (including real property transfers), and to avoid unnecessary interference with traditional religious practices.

- DOE Order 5400.5, Radiation Protection of the Public and the Environment (DOE 2003), establishes acceptable levels for the release of property on which any radioactive substances or residual radioactive material was present.

- The Secretary of Energy's Land and Facility Use Policy (DOE 1994), and DOE Policy 430.1, Land and Facility Use Planning Policy, (DOE 1996c), state that DOE sites must consider how best to use DOE land and facilities to support critical missions and to stimulate the economy while preserving natural resources, diverse ecosystems, and cultural resources.

Following are other documents and reports that address legacy management issues across the DOE complex and help to better define the activities that may be required for legacy management purposes. (As mentioned before, the term "stewardship," instead of "legacy management," is used in the descriptions.)

- From Cleanup to Stewardship (DOE 1999a) addresses the nature of long-term stewardship at DOE sites, anticipated long-term stewardship at DOE sites, and planning for long-term stewardship.

- A Report to Congress on Long-Term Stewardship (DOE 2001b), required by the FY 2000 National Defense Authorization Act (NDAA), represents the most comprehensive compilation of DOE's anticipated long-term stewardship obligations to date, and provides summary information for site-specific, long-term stewardship scope, cost, and schedule. The report provides a snapshot of DOE's current understanding of stewardship activities and highlights areas where significant uncertainties still remain.

- Managing Data for Long-Term Stewardship (ICF 1998) represents a preliminary assessment of how successfully information about the hazards that remain at DOE sites will be preserved and made accessible for the duration of long-term stewardship.

- Long-Term Stewardship Study (DOE 2000b) describes and analyzes several significant national or crosscutting issues associated with long-term stewardship and, where possible, options for addressing these issues. The principal purposes are to promote information exchange and to provide information on the decision-making processes at the national level and at individual sites.

- The Long-Term Control of Property: Overview of Requirements in Orders DOE 5400.1 and DOE 5400.5 (DOE 1999b) summarizes DOE requirements for radiation protection of the public and environment, with the intent of assisting DOE elements in planning and implementing programs for the long-term control (stewardship) of property.

- Memorandum – Long-Term Stewardship "Guiding Principles" (DOE 2000c) identifies broad concepts pertaining to stewardship and elements identified by Ohio stakeholders as critical to the success of stewardship planning.

- Institutional Controls in RCRA and CERCLA Response Actions at Department of Energy Facilities (DOE 2000a) provides DOE environmental restoration project managers with the information on institutional controls needed to make environmental restoration remedy decisions under the Resource Conservation and Recovery Act (RCRA) and CERCLA.

- Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups (EPA 2000) provides an overview of the types of institutional controls that are commonly available, including their relative strengths and weaknesses. It also provides a discussion of the key factors to consider when evaluating and selecting institutional controls in Superfund and RCRA corrective action cleanups.

Most of the DOE sites that are in the cleanup phases are planning their legacy management activities. There are, however, a few facilities at which legacy management has been initiated. The applicable laws and regulations provide a foundation for legacy management practices, but each site is different. Each facility will have to work in conjunction with those laws and regulations, using them as guidelines, to develop legacy management plans that best suit that facility. Part of the legacy management planning at Fernald included a study conducted by Florida International University that resulted in the creation of a database of state and federal laws, regulations, orders, etc. that pertain to legacy management. The database includes titles and summaries of the requirements, including a discussion of their applicability to the Fernald site. A summary report describes the project and the development of the database (FIU 2002).

DOE guidance identifies why it was necessary to address legacy management before completion of remediation and site closure (DOE 1999a):

- To provide a smooth transition from cleanup to legacy management;
- To emphasize that the cleanup goal in many cases was to reduce and control, not eliminate, risk and cost;
- To ensure that Congress, stakeholders and regulators had a clear understanding of the cleanup mission and to clarify that there was an endpoint;
- To set realistic expectations and show interim successes and results as remediation progressed;
- To identify technology research and development needs; and
- To assure regulators and the public that DOE will not walk away from its post-remediation obligations.

DOE defines stewardship as "all activities required to protect human health and the environment from hazards remaining after remediation is completed" (DOE 1999a). Three categories, or levels, of stewardship are recognized: active, passive, and no stewardship required. Active stewardship is defined as "the direct performance of continuous or periodic custodial activities such as controlling access to the site; preventing releases from a site; performing maintenance operations; or monitoring performance parameters." Passive stewardship is defined as "the long-term responsibility to convey information warning about the hazards at a site or limiting access to, or use of, a site through physical or legal mechanisms." No stewardship is required "where cleanup has been completed to levels that will allow

for unrestricted or residential future use" (DOE 1999a). The Fernald site will have a combination of active and passive measures during legacy management of the site. This plan describes both active and passive measures, ranging from regular monitoring and maintenance to land use restrictions and postings.

The input of regulators and the public throughout the legacy management process and providing access to site information during legacy management are also fundamental components of the long-term care of the Fernald site. Public involvement and access to information during legacy management are emphasized in all DOE policy and guidance and this Legacy Management Plan is intended to clearly outline DOE's commitment to those aspects of legacy management.

1.3 APPROACH TO LEGACY MANAGEMENT AT FERNALD

At the Fernald site, completing remediation to levels acceptable for unrestricted use was not feasible, with the exception of the groundwater remedy. As a result, legacy management is necessary to ensure that all remedial efforts continue to be effective and protective of human health and the environment. The OSDF was constructed to contain waste materials that will remain on the Fernald site. This facility must be monitored and maintained to ensure its integrity and the public's safety.

1.3.1 Inspections per Institutional Controls Plan Requirements

Site inspections include inspections of the OSDF cap; the leachate collection system (LCS) and leak detection system (LDS); the CAWWT; extraction wells and associated piping; the active outfall line; and perimeter areas of the site. Inspections can be scheduled or unscheduled as needed. These inspections are further defined in the IC Plan.

1.3.2 Increase Monitoring As Needed

The Office of Legacy Management has the option of increasing monitoring at any time, as needed. However, any proposed decrease in the frequency of monitoring activities included in the IC Plan will require approval by U.S. EPA.

1.3.3 DOE Management of the Legacy Management Program

The mission of the DOE legacy management program includes providing sustained human and environmental protection through the mitigation of residual risks, and the protection of natural and cultural resources at DOE facilities. The Office of Legacy Management at DOE Headquarters provides overall departmental policy, direction, and program guidance on matters affecting legacy management.

Personnel from the DOE Office of Environmental Management at the Fernald site worked closely with the DOE Ohio Field Office, the DOE Consolidated Business Center, and the Office of Legacy Management to transition the site from remedial activities to the implementation of legacy management. The DOE Office of Environmental Management at the Fernald site was fully engaged with the DOE Ohio Field Office and the Office of Legacy Management in planning the closure and long-term care of the Fernald site, including the development of this LMICP.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION

2.1.1 Fernald Site Description

The Fernald site is situated on a 1,050-acre tract of land, approximately 18 miles northwest of Cincinnati, Ohio. The Fernald site is located near the unincorporated communities of Ross, Fernald, Shandon, and New Haven (refer to Figure 1). The former production area occupies approximately 136 acres in the center of the site. The waste pit area and the K-65 silos were located adjacent to the western edge of the production area. Paddys Run flows from north to south along the Fernald site's western boundary and empties into the Great Miami River approximately 1.5 miles south of the site. The Fernald site lies on a terrace that slopes gently between vegetated bedrock outcroppings to the north, southeast, and southwest. The site is situated on a layer of glacial overburden, consisting primarily of clay and silt with minor amounts of sand and gravel, that overlies the Great Miami Aquifer. Paddys Run and the Storm Sewer Outfall Ditch, which empties into Paddys Run, have eroded the glacial overburden, exposing the sand and gravel that make up the Great Miami Aquifer.

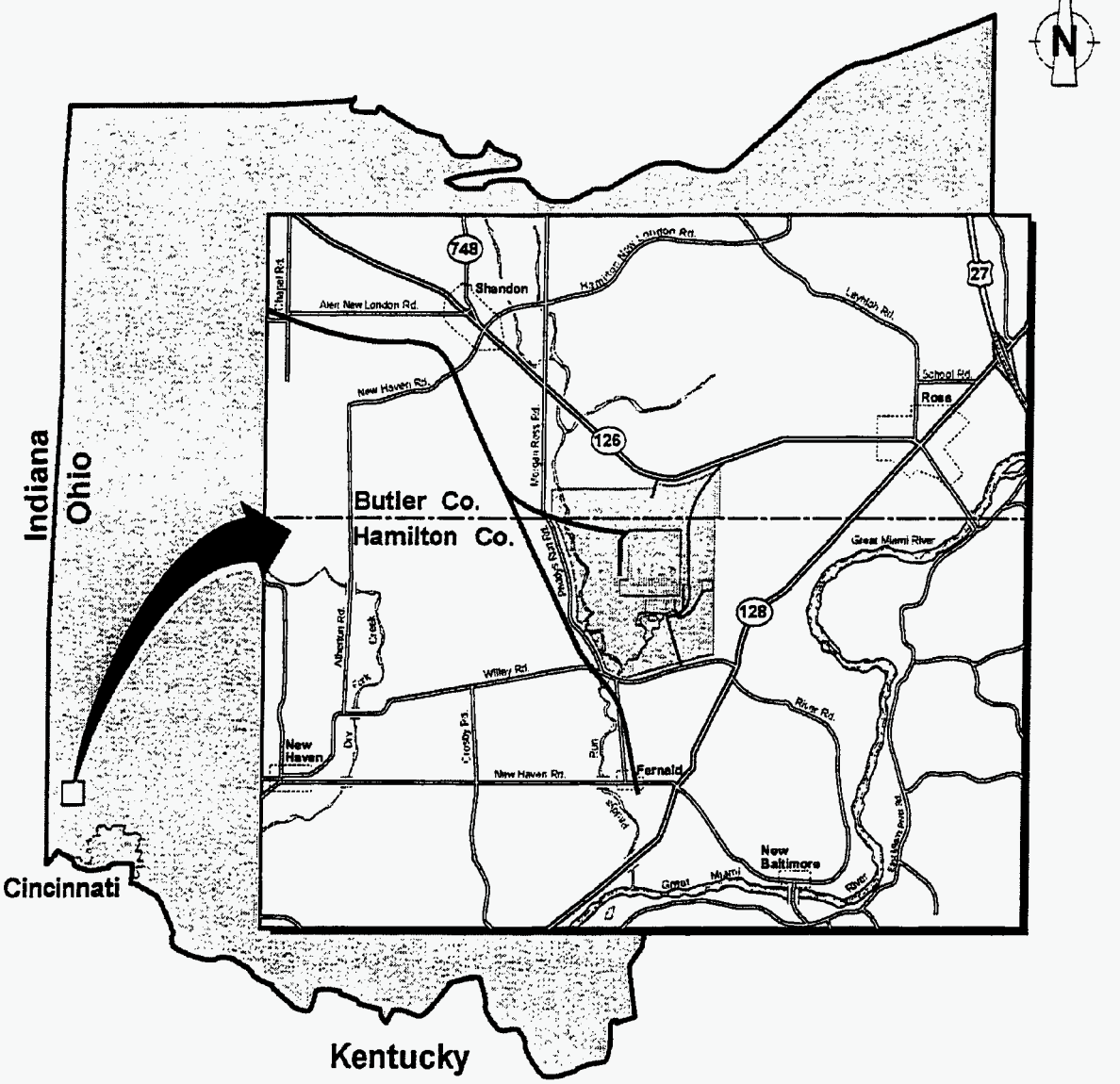
2.1.2 Fernald Site and Surrounding Area

In the vicinity of the Fernald site are the communities of Shandon (northwest), Ross (northeast), New Baltimore (southeast), Fernald (south), and New Haven (southwest) (refer to Figure 1). Land use in the area consists primarily of residential use, farming, and gravel excavation operations. Some land in the vicinity of the Fernald site is dedicated to housing development, light industry, and park land. The Great Miami River is located to the east, and, like Paddys Run and the Storm Sewer Outfall Ditch, has eroded away significant portions of the glacial overburden, exposing the sand and gravel that make up the Great Miami Aquifer.

2.2 SITE HISTORY

2.2.1 Feed Materials Production Center

The Feed Materials Production Center (FMPC) was the original name given to the Fernald site. The FMPC was constructed in the early 1950s by the Atomic Energy Commission (AEC) for the purpose of producing enriched uranium metal from ores and process residues for use at other government facilities involved in the production of nuclear weapons for the nation's defense. A variety of materials were utilized throughout the production process, including ore concentrates and recycle materials which were dissolved in nitric acid to produce a uranyl nitrate hexahydrate (UNH) feed solution. The UNH was then concentrated and thermally denitrated to uranium trioxide (UO_3), or orange oxide. The orange oxide was either shipped to the gaseous diffusion plant in Paducah, Kentucky, or was converted to uranium tetrafluoride (UF4), or green salt. The green salt was blended with magnesium-metal granules and placed in a closed reduction pot to produce a mass of uranium metal called a derby. Some derbies were shipped to other facilities but the remainder were melted and poured into pre-heated graphite molds to form ingots. Some ingots were rolled or extruded to form billets. Small amounts of thorium were also produced at the site from 1954 to 1975. The site then served as a thorium repository for the DOE. Two reports that explain in greater detail the role of the Fernald site within the DOE complex and the processes



The Fernald site covers about 1,050 acres (425 hectares).

Figure 1. Fernald and Vicinity

that took place at the Fernald site are: Historical Documentation of the Fernald Site and Its Role Within the U.S. Department of Energy Weapons Complex (DOE 1998c), and Historical Documentation of Facilities and Structures at the Fernald Site (DOE 1998c).

Uranium metal was produced at the site from 1952 through 1989. During that time up to 1,000,000 pounds of uranium were released to the environment, resulting in contamination of soil, surface water, sediment, and groundwater on and around the site.

2.2.2 Change in Site Mission from Production to Remediation

In July 1986, the DOE and the U.S. EPA signed a Federal Facilities Compliance Agreement (FFCA), addressing impacts to the environment associated with the site. The DOE agreed to conduct the FFCA investigation as a remedial investigation/feasibility study (RI/FS) in accordance with the guidelines of CERCLA. In 1989, production ceased at the FMPC due to a decrease in the demand for the feed materials and an increase in environmental restoration efforts. The site was subsequently included on the U.S. EPA National Priorities List. In 1991, the site was renamed the Fernald Environmental Management Project (FEMP) and the site was officially closed as a production facility. The DOE's management of the site switched from the Defense Programs division to the Environmental Restoration and Waste Management division. The National Lead Company of Ohio operated the site during most of the production years under contracts with the AEC and DOE. The Westinghouse Environmental Management Company became the site's prime contractor in 1986. In 1992, after conversion of the site's mission to environmental cleanup, DOE awarded an Environmental Restoration Management Contract to the Fernald Environmental Restoration Management Corporation, now known as Fluor Fernald, Inc. DOE awarded a new contract to Fluor Fernald in November 2000 to complete the remediation of the facility. In 2003, DOE changed the site name to the Fernald Closure Project. The current site-wide remediation effort is being conducted pursuant to CERCLA. Waste management is being conducted according to RCRA.

2.3 REMEDIATION PROCESS

2.3.1 Summary of Remediation Efforts

CERCLA is the primary driver for environmental remediation of the Fernald site. The site was divided into five operable units (OUs) as follows:

- OU1 – Waste Pits Area
- OU2 – Other Waste Units
- OU3 – Production Area
- OU4 – Silos 1 through 4
- OU5 – Environmental Media.

A RI/FS was conducted for each of the five OUs listed above. Based on the results of the RI/FS, Records of Decision (RODs) were issued outlining the selected remedy for each OU. A summary of the remedies follows.

The remedy for OU1 included removing all material from the waste pits, stabilizing the material by drying, and shipping it off site for disposal. This process was completed in summer 2005. The remedy for OU2 includes removing material from the various units, disposing of material that meets the on-site

waste acceptance criteria (WAC) in the OSDF, and shipping all other material off-site for disposal. WAC were developed by DOE and regulators, in consultation with the stakeholders, to strictly control the type of waste disposed on site. The OU3 remedy includes decontaminating and decommissioning all contaminated structures and buildings, recycling waste materials if possible, disposing of material that meets the on-site WAC in the OSDF, and shipping all other material off site for disposal. The OU4 remedy includes removal and treatment of all material from the silos, dismantling of the silos, and shipping the waste materials and silos debris off site for disposal.

OU5 includes all environmental media, including soil, sediment, surface water, groundwater and vegetation. The Site-wide Excavation Plan (SEP) (DOE 1998e) describes the remediation of soils. First, material exceeding the WAC for the OSDF will be dispositioned by one of the following: 1) transporting material to an off-site disposal facility for treatment and disposal; (2) treating material on site and transporting to an off-site disposal facility; or (3) treating material on site and disposing of it in the OSDF. Details and exceptions for the above are outlined in the SEP.

Soil and sediment exceeding final remediation levels (FRLs), which are defined in the SEP, but are below the OSDF WAC will be excavated and placed in the OSDF. Soil certification processes will be performed to ensure that excavation has removed all impacted material, as outlined in the SEP.

The OU5 ROD (DOE 1996a) describes the approved remediation method of pump-and-treat for groundwater. The OU5 ROD also committed to continual evaluation of remediation technologies to allow for the improvement of the remedy with new technologies. As a result, an enhanced groundwater remedy, which could reduce groundwater remediation by ten years, was suggested and subsequently approved. The enhanced remedy includes additional extraction wells and the re-injection of treated groundwater to increase the rate at which contaminants move through the aquifer and are removed by the extraction wells.

The primary constituent of concern for groundwater is uranium. Other constituents have been identified and will be removed during the remediation of the uranium. A complete list of all of the constituents identified in groundwater can be found in the OU5 ROD. The FRL for uranium in groundwater is 30 parts per billion. In the original ROD, the FRL for uranium in groundwater was 20 ppb. After a change in the drinking water standard by U.S. EPA and approval of an Explanation of Significant Differences for Operable Unit 5 (DOE 2001) by U.S. EPA and OEPA, the FRL was raised to 30 ppb. DOE and regulators based the target cleanup levels for groundwater on use of the aquifer as a potable water supply and incorporated Safe Drinking Water Act standards for all constituents for which these standards were available.

Ecological restoration followed remediation and was the final step to completing cleanup of the site. Ecological restoration was implemented in order to begin to facilitate settlement of a 1986 State of Ohio Claim against the DOE for injuries to natural resources at Fernald under CERCLA. Settlement of the claim may impact the site's configuration after closure and result in revisions to this LMICP. Ecological restoration activities at the site were also implemented to address wetland mitigation requirements under the Clean Water Act, and to stabilize and re-vegetate areas impacted during remediation. The approach

facility (Section 2.4.5). It was anticipated that 2.5 million cubic yards of impacted materials would be placed in the facility. Approximately 80 percent of the material would be impacted soil and the remaining 20 percent would consist of building demolition rubble, fly ash, lime sludge, and small amounts of miscellaneous materials. The PCCIP (Attachment B) provides a summary of the materials permitted to be placed in the OSDF. The volumes and percentages mentioned above were subject to change during the actual remediation process. Final volumes are included with the as-built drawings.

The design approach for the OSDF can be found in both the OU2 ROD (DOE 1995a), and the Final Design Calculation Package; On-site Disposal Facility (GeoSyntec 1997). The design includes a liner system, impacted material placement, final cover system, leachate management system, surface water management system, and other ancillary features.

The footprint of the actual disposal facility is approximately 75 acres. A buffer area and perimeter fence surrounds the disposal facility. The OSDF, including the buffer, covers approximately 120 acres. Institutional controls are described in further detail in the IC Plan (Volume II) with additional details included in the PCCIP, OU2 ROD, and OU5 ROD.

2.4.2 Restored Areas

Approximately 900 acres of the Fernald site were ecologically restored. Restored areas are those areas of the site that have been graded following remedial excavation, amended, planted and/or enhanced to create the early stages of ecosystems comparable to native pre-settlement southwestern Ohio. The specific habitats restored include upland forest, riparian forest, tallgrass prairie/savanna, and wetlands/open water (refer to Figure 2). In addition, previously existing habitats (such as the pine plantations) were enhanced. Following are brief summaries of the habitat restorations. Details of the actual projects and further details on the restored areas are described in the NRRP (DOE 2002c).

Upland Forest: Upland forest areas existed in a northern portion, a southern portion and the western perimeter of the site. Restoration activities were conducted to expand these forested areas. The Site-wide Characterization Report (DOE 1993) describes the Fernald site as existing in a transition zone between the Oak-Hickory and Beech-Maple sections of the Eastern Deciduous Forest province. That is, a mosaic of both Oak-Hickory and Beech-Maple forest types can be found in southwest Ohio. Forest communities at the Fernald site would gradually move toward one of these forest types, depending on site-specific factors such as topography and hydrology. Therefore, restoration of upland forests at the Fernald site focused on the establishment of this Beech-Maple, Oak-Hickory transition zone. The trees used are native to southwestern Ohio and are listed in the NRRP, Table 3-1.

Riparian Forest: Riparian corridors existed along Paddys Run and the Storm Sewer Outfall Ditch. Restoration activities were conducted to expand these corridors through re-vegetation. The trees species selected were those that can withstand periodic inundation, and they are listed in the NRRP. The Paddys Run floodplain was expanded as part of the long-term management plan for Paddys Run.

taken to ecological restoration of the Fernald site is outlined in the Natural Resource Restoration Plan (NRRP) (DOE 2002c). Compliance with the 2002 NRRP was a closure contract commitment for Fluor Fernald, Inc.

The goal for ecological restoration of the Fernald site was to enhance, restore, and construct as feasible, given post-excavation landforms and soils, the early stages of vegetative communities native to pre-settlement southwestern Ohio. Figure 2 illustrates the conceptual ecological restoration of the Fernald site. Restoration of the Fernald site involved four major components:

1. Expansion/enhancement of the riparian corridor along Paddys Run.
2. Expansion/enhancement of the wooded areas in the northern portion of the Fernald site.
3. Restoring a contiguous prairie in the central and eastern portions of the Fernald site (including the OSDF).
4. Creating open water areas and wetlands throughout the site as topography and hydrology allow.

The construction of public use amenities, such as trails and overlooks, was discussed as part of the final land use at Fernald; however, the decision regarding the amenities is tied directly to the settlement of the Fernald Natural Resource claim. It is recognized that there is stakeholder support for public use amenities as a result of the Future of Fernald Process and the Public Use discussions DOE held in the early part of 2002. This LMICP will be revised to reflect the results of the Natural Resource Damage Assessment (NRDA) negotiations.

2.3.2 Completion of Site Remediation

In January 2003, the site's name was changed to the Fernald Closure Project (FCP). DOE's closure contract with Fluor Fernald, Inc. outlined the scope of remediation activities required for closure. The process of legacy management or long-term stewardship began immediately following DOE's acceptance of Fluor Fernald's Declaration of Physical Completion (this is the point commonly referred to as "closure"). The Office of Legacy Management assumed legacy management responsibilities for the site on that date.

2.4 SITE CONDITIONS AT CLOSURE

The following provides an overview of the site conditions after remediation. It is clear that some remediation (continuing groundwater remediation) will be ongoing during legacy management.

2.4.1 On-site Disposal Facility

Based on a pre-design investigation, the most suitable location for the OSDF was determined to be on the eastern side of the Fernald site (refer to Figure 2). The details of the investigation are in the Pre-design Investigation and Site Selection Report for the On-site Disposal Facility (DOE 1995c). This location was considered the best because of the thickness of the gray clay layer that overlies the Great Miami Aquifer.

Construction on Cell 1 of the OSDF was initiated in December 1997 and the permanent cap for Cell 1 was complete in late 2001. The OSDF consists of eight individual cells covered by a continuous permanent cap. The final dimensions are approximately 950 feet east to west, 3,600 feet north to south, with a maximum height of 65 feet. As-built drawings will be available at the multi-use educational

FERNALD LEGACY MANAGEMENT
Future Use

LAND USE
- 395 acres of Woodlots
- 332 acres of Prairie
- 120 acres of OSDF
- 81 acres of Wetlands
- 60 acres of Open Water
- 33 acres of Savanna
- 29 acres of Infrastructure

Figure 2

Fluor Fernald

Graphic # 8131.19-2 12/05

Tallgrass Prairie/Savanna: The waste pit, production, OSDF, and borrow (east field) areas were restored as a contiguous prairie. Some prairie/savanna was established along the western perimeter of the site but concentration was primarily in formerly disturbed areas. Prairie restoration involved amending soil, if necessary, and seeding of grasses and forbs (wildflowers). All grasses and forbs seeded were native to the area. Savannas were established by planting a sparse mix of trees and shrubs, and seeding the area with native grasses.

Wetlands/Open water: Wetlands and open water areas were established throughout the site where topography permitted. The former production area has open water areas as a result of deep excavations, and wetlands will be established throughout the site. DOE is responsible for providing 17.8 acres of mitigated wetlands under Section 404 of the Clean Water Act. In addition to mitigating wetlands, upland and riparian forest re-vegetation in various areas were designed to restore wet woods. Details and drivers for wetland mitigation are described in the NRRP.

2.4.3 Groundwater

Operation of some portions of the groundwater extraction system will continue into legacy management. Groundwater remediation and monitoring will continue until the FRL of 30 ppb for uranium has been achieved. Groundwater monitoring will be required following completion of remediation to ensure continued protectiveness of the remedy and to support the CERCLA five-year reviews. The exact frequency and approach to monitoring to support the five-year reviews has not been specifically determined at this time. The OMMP (DOE 2004d) is included as Attachment A to the LMICP and describes the groundwater extraction system (well fields, treatment facility, etc.) used to complete the remedy. Additional information is included in Section 3.1.3 of the IC Plan. Long-term monitoring of groundwater will be required around the OSDF. The exact approach to groundwater monitoring has been continuously refined with input from the stakeholders and regulators.

2.4.4 Uncertified Areas

Various areas of the site were not certified at closure. Figure 3 illustrates these areas and they are posted or identified by some means in the field. These areas include sub-grade utility corridors that exist below both certified and uncertified soil and structures situated on both certified (existing paved roads) and uncertified (CAWWT footprint) soil. Remediation and certification of these remaining areas will have to occur following removal of the CAWWT (after groundwater is certified clean) and following removal of any of the utilities, as they are no longer needed. Due to the uncertainty of the groundwater remediation end date, no tentative schedule for the soil certification in the corridors can be established now.

2.4.5 Existing Infrastructure and Facilities

A few facilities remain on site. These include the CAWWT and supporting infrastructure, extraction wells and associated piping and utilities, the outfall line to the Great Miami River, and the Silos Warehouse.

DOE will establish a Multi-Use Educational Facility (MUEF) on site (anticipated completion is in 2007). The Silos warehouse will be refurbished for use as the MUEF. The MUEF will contain information and context on the remediation of the Fernald site, including information on site restrictions, ongoing maintenance and monitoring, and residual risk information. The MUEF will also provide a storage location for historical information and photographs, a reading room, a meeting place and other education

information as appropriate. A primary goal of the MUEF is to fulfill an informational and educational function within the surrounding community as an institutional control. The MUEF will serve to maintain awareness of site history and conditions and help prevent unsafe disturbances and uses of the site.

Remodeling work and installation of educational materials and information will occur after site closure in coordination with the Office of Legacy Management. The MUEF will be maintained and operated under the direction of the Office of Legacy Management. DOE will evaluate the use of the MUEF and the programming provided by the MUEF on a periodic basis with Stakeholder input. The design of the MUEF will include the development of specific evaluation criteria for successful operation of the MUEF. Design of the MUEF will be completed with input from Stakeholders. Upon completion of the MUEF, DOE will obtain Stakeholder input on decisions regarding changes to the MUEF or ongoing operation of the MUEF.

Twenty-three acres of the DOE property were identified for potential community use, as described in the Environmental Assessment on Final Land Use (DOE 1998b). The area has been certified. No additional ecological restoration was planned for this area. However, since the environmental assessment was issued, there has been no interest or commitment from any entity outside of DOE for its development or use. In the National Environmental Protection Act (NEPA) Finding of No Significant Impact, issued in 1999, DOE deferred a decision on the 23 acres until 2004 because there was no further interest in use of the property. DOE is no longer considering any development of the 23 acres. The area will be included in the surveillance and maintenance of the site during legacy management.

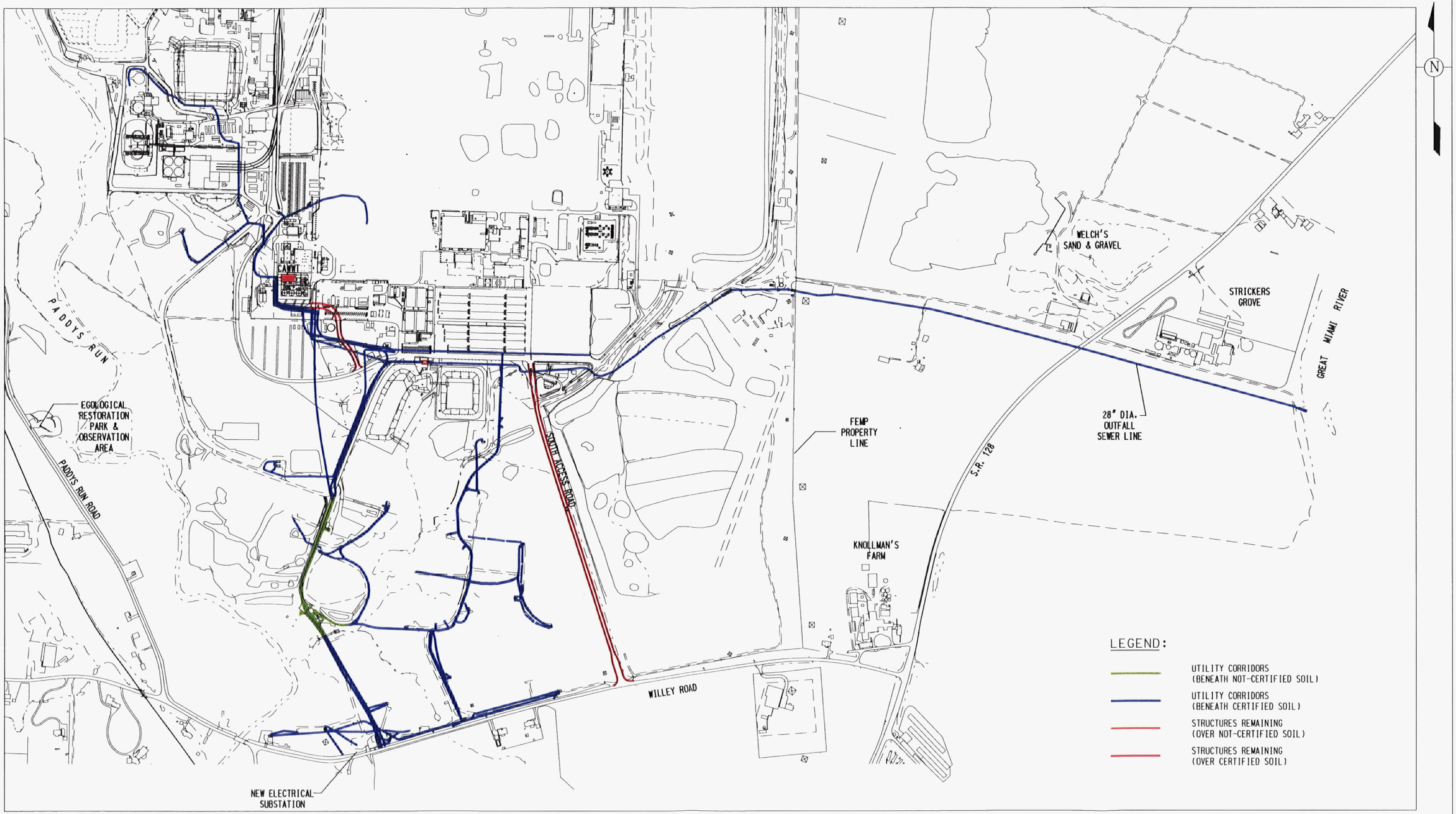


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FIGURE 3. UNCERTIFIED AREAS

3.0 SCOPE OF LEGACY MANAGEMENT AT THE FERNALD SITE

Post-closure requirements include maintaining the remedies and ensuring the protectiveness of human health and the environment. Other post-closure activities include monitoring and maintaining the Fernald site property, facilities, and structures that remain. Post-closure requirements at the Fernald site are the responsibility of the Office of Legacy Management. Within the Office of Legacy Management, the Land and Site Management organization (LM-50) is responsible for ongoing surveillance and maintenance at the Fernald site and the continuation of the groundwater remedy.

The commitments in the RODs relevant to legacy management include the following:

- DOE will achieve the FRLs for all contamination attributed to the Fernald site. Site-wide cleanup levels for soil are documented in the OU2 ROD, and in the OU5 ROD based on a recreational use and the undeveloped park (i.e., greenspace) scenario. Once achieved, the FRLs will not allow unrestricted use of the Fernald site and institutional controls will be required.
- Per the OU2 ROD, the Fernald site will remain under federal ownership. Therefore, any final land use alternative and legacy management planning has to include DOE's commitment to continued federal ownership.
- Commitments for other environmental monitoring will be carried out for as long as appropriate per the existing RODs.

Maintaining institutional controls at the Fernald site is a fundamental component of legacy management and includes ensuring no residential or agricultural and only limited recreational uses occur on the property. Activities such as swimming, hunting, fishing and camping are prohibited. Additional detail regarding prohibited activities is included in the IC Plan, Section 2.1. The intent of this Legacy Management Plan is to provide an overview of institutional controls required for the Fernald site to support legacy management. The separate IC Plan is required for the Fernald site per the DOE's commitment to U.S. EPA in the OU 5 ROD. The IC Plan is included as Volume II of this LMICP. DOE and U.S. EPA guidance were used to identify planned institutional controls at the Fernald site. The IC Plan will continue to be updated annually as needed based on changing site conditions and input from stakeholders and regulators. Section 4.4 discusses the five-year review process and how it relates to legacy management, including institutional controls.

The scope of legacy management activities at the Fernald site fall into two categories: (1) operation and maintenance of the remedies, and (2) legacy management in restored areas. Legacy management activities related to the maintenance of the remedies includes monitoring and maintenance of the OSDF; the CAWWT and supporting infrastructure; the extraction wells and associated piping; and the active outfall line to the Great Miami River. Also included is the decontamination and dismantling of the aquifer remediation infrastructure (CAWWT, well system, etc.). The OMMP includes the details of the monitoring and maintenance of the CAWWT, groundwater restoration systems, and the active outfall line. Legacy management activities also include ensuring that remedy-driven restrictions on access and use of the Fernald site are enforced, continuation of aquifer remediation, and information management. Following site physical completion, monitoring becomes a legacy management responsibility.

Legacy management in restored areas includes ensuring that natural and cultural resources are protected in accordance with applicable laws and regulations. Construction of any public use amenities, such as trails, overlooks, etc., is tied to settlement of the Natural Resource claim. This LMICP will be revised to reflect the impacts to the site based on the results of the settlement. Any amenities supporting access and use of the Fernald site will be kept in a safe configuration. The cleanup levels established for the Fernald site ensured the site was remediated to a level consistent with recreational use.

The potential reburial of Native American remains is another initiative that has been considered at the Fernald site since 1999. DOE agreed to make land available for the re-interment of Native American remains with the following understandings:

1. The land remains under federal ownership.

2. DOE will not take responsibility for, or manage, the re-interment process. Maintenance and monitoring will not be funded or implemented by DOE.

3. The remains must be culturally affiliated with a modern day tribe. The National Park Service had no objections to the re-interment process as long as the "repatriations associated with the reburials comply with the Native American Graves Protection and Repatriation Act as applicable."

4. Records must be maintained for all repatriated items re-interred under this process. DOE is not responsible for these records.

Thus far, several federally recognized tribes have been contacted regarding this offer of land for re-interment purposes. To date, only one response has been received from a modern day tribe with repatriated remains under the Native American Graves Protection and Repatriation Act. The Miami Tribe of Oklahoma has informed DOE that they are not interested in use of the site. No other responses from modern day tribes have been received and DOE is no longer pursuing the effort. The proposal may be reconsidered in the future if other modern day tribes with repatriated remains come forward.

3.1 LEGACY MANAGEMENT OF THE OSDF

The OU 2 ROD states that the Fernald site will remain under federal ownership. DOE has committed to the goal of ensuring legacy management activities of the OSDF in perpetuity. The PCCIP (Attachment B) for the OSDF outlines the routine legacy management activities for the initial 30 years. The activities include routine inspections and ongoing monitoring of the LCS, the LDS, and groundwater in the vicinity of the OSDF. DOE will conduct CERCLA reviews every five years and will issue a report summarizing the results of the review to the appropriate regulatory agencies. Periodic monitoring and maintenance of the LCS and vegetative cap of the OSDF will be necessary, as well as occasional maintenance of signs, fencing, and the buffer zone around the OSDF. Further detail regarding the inspections and monitoring are included in the IC Plan.

Remote monitoring of the OSDF was initiated on Cell 1 of the OSDF. The remote systems installed on Cell 1 include sensor technology to monitor groundwater and rainwater intrusion, subsidence, integrity of the LCS and the cap, and real-time characterization and tracking of leachate and groundwater flow. It has been determined from Cell 1 that there is no added beneficial use of the automated monitors; therefore, no

such monitors will be installed on any of the other cells. Appropriate monitoring and maintenance of the OSDF will be carried out without the automated monitors. An appropriate method will be determined for abandoning the monitors in place. An abandonment plan will be developed and submitted to the agencies prior to their abandonment. Every effort will be made to find an appropriate re-use of the monitoring equipment. Information previously collected from the sensors on Cell 1 will be managed with other data required for legacy management. Background information regarding the OSDF design, will be available online.

The extent of legacy management activities will continue to be defined based on regulatory requirements, stakeholder and regulatory input, and agreements between DOE and the U.S. EPA and OEPA. Details of the maintenance and monitoring requirements for the LCS, the capping/cover system and the support systems for the OSDF are included in the IC Plan and supporting documents.

3.2 SURVEILLANCE AND MAINTENANCE OF RESTORED AREAS

Per the OU5 ROD, DOE will protect the existing natural resources at the Fernald site. Monitoring and maintenance of restored areas focuses on ensuring the natural resources are protected in accordance with appropriate laws and regulations, such as the Clean Water Act and the Endangered Species Act. Wetlands and threatened and endangered species are examples of natural resources that will be monitored. Existing cultural resource areas will also have to be monitored to ensure the integrity of these areas is not threatened.

Restored areas will be inspected to ensure that protected natural resources (e.g., wetlands, threatened and endangered species) are maintained in accordance with applicable laws and regulations. Physical disturbance of restored areas will not be permitted unless authorized by the Office of Legacy Management (if necessary, in consultation with U.S. EPA). Soil and vegetation will not be removed from the Fernald site unless authorized by the Office of Legacy Management.

Existing cultural resource areas, including the re-interment area that resulted from the public water supply project, is a part of the undeveloped park and requires inspections to ensure their preservation, and to determine if there are any impacts to the resources caused by natural forces, vandalism, or looting. Actions will be implemented if there is evidence that the integrity of a site is threatened due to natural or human forces.

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4.0 OVERSIGHT OF LEGACY MANAGEMENT AT FERNALD

4.1 OFFICE OF LEGACY MANAGEMENT RESPONSIBILITIES

The Office of Legacy Management is responsible for oversight of the Fernald site during legacy management. They will ensure that all legacy management activities are conducted as required. They are the decision making body regarding changes in surveillance and maintenance, any engineering changes required, any changes in access or public use, etc. The Office of Legacy Management also manages any contractors hired to perform work required for legacy management purposes and ensures that the contractors have the skills necessary to perform the work. The Office of Legacy Management is also responsible for communicating with regulators and the public regarding legacy management of the Fernald site.

4.2 ROLE OF SITE CONTRACTOR AND USE OF SUBCONTRACTS

A site contractor, or contractors, will support the Office of Legacy Management, will work closely with and communicate regularly with the Office of Legacy Management, and will be the physical presence at the site. Contractor personnel will be responsible for operating the groundwater remediation systems, conducting inspections, monitoring, and sampling. They will collect all data, develop the reports, and make those reports available to stakeholders and the public. Maintenance activities for the OSDF will be their responsibility as well. The contractors will notify the Office of Legacy Management in the event of an emergency and will take action to prevent damage to the site.

Operation and maintenance tasks may be carried out by additional subcontractor services. Examples include minor repairs to fencing, gates, signs, or components of the groundwater infrastructure. Repairs that require earthwork, erosion control, seeding, mowing, clearing, herbicide application, or repair to pumps and piping will be completed by subcontractor services.

Goods and services will be procured according to DOE-approved procurement policies and procedures. These procedures use the best commercial practices and are in compliance with requirements and intent of the federal acquisition regulations and DOE acquisition regulations. The terms and conditions in subcontracts incorporate required flow-down clauses from the prime contract.

As requirements are identified by technical leads, a scope of work will be developed and a solicitation package will be initiated. The package will generally include statements of work, health and safety requirements, estimated costs, and required approvals. The written contracts will also include the appropriate restrictions and prohibited activities for the work to be performed on site. In cases where there are similar existing subcontracts, the existing work scope may be used as a framework for a new subcontract. New subcontracts may be developed through a competitive bid process or through negotiation of a sole-source procurement. Determination of the type of procurement will be made by analyzing the unique nature of the work scope, the critical nature of the services, and the importance of historical information known only by the previous contractor. Although the Office of Legacy Management intends to maximize the use of new subcontracts for most services, there may be a need to request assignment of an existing subcontract in unique circumstances to ensure continuation of a service.

4.3 ROLE OF REGULATORS

The Office of Legacy Management is required to implement the requirements outlined in the IC Plan subject to enforcement by the U.S. EPA. The regulators will ensure that DOE is performing the required legacy management operations, surveillance, and maintenance activities at the Fernald site, as agreed upon by the DOE and U.S. EPA, in consultation with the OEPA, in the LMICP. Both U.S. EPA and OEPA will be provided with all reporting on the legacy management activities at the Fernald site. Both U.S. EPA and OEPA will be notified of any institutional control breaches as outlined in Section 4.0 of the IC Plan. Both U.S. EPA and OEPA will be involved in oversight of legacy management activities at the Fernald site.

4.4 CERCLA FIVE-YEAR REVIEWS

Under CERCLA, a review of the remedy at sites where some level of contaminants is left such that use of the site is limited is required every five years. The CERCLA five-year reviews at the Fernald site will focus on the protectiveness of the remedies associated with each of the five OUs. Also included will be summaries of the inspections conducted for the OSDF, the CAWWT facility, the groundwater restoration system, and the active outfall line to the Great Miami River. To facilitate the review, a report addressing the ongoing protectiveness of the remedies will be prepared and will be submitted to the U.S. EPA and OEPA. The institutional controls portion of the report will include the data collected from monitoring and sampling; summaries of the inspections conducted of the Fernald site and OSDF site and cap during the five-year period; and a discussion on the effectiveness of the institutional controls. If it is determined that a particular control is not meeting its objectives then required corrective actions will be included. The review may lead to revisions to the monitoring and reporting protocols.

4.5 REPORTING REQUIREMENTS

The Office of Legacy Management will issue annual reports to U.S. EPA, OEPA and other key stakeholders, which will provide information on institutional controls, monitoring, maintenance, site inspections and corrective actions. The annual site environmental report will continue to be submitted to U.S. EPA and OEPA on June 1 of each year. It will continue to document the technical approach and summarize the data for each environmental medium and will summarize CERCLA, RCRA, and waste management activities. The report will also include water quality and water accumulation rate data from the on-site disposal facility monitoring program. The summary report serves the needs of both the regulatory agencies and other key stakeholders. The accompanying detailed appendices of the site environmental report are intended for a more technical audience including the regulatory agencies and will serve to fulfill National Emissions Standards for Hazardous Air Pollutants (NESHAP) reporting requirements, as necessary. Additionally there will be continued reporting requirements as required under other regulatory programs that will be addressed outside the annual site environmental reports (e.g., National Pollutant Discharge Elimination System [NPDES] monthly discharge reports).

Once it is determined that the institutional controls are functioning, the remedy is performing as intended, and the groundwater remediation is effective, the reporting frequency may be re-evaluated. In the event of unacceptable conditions or disturbance, more frequent notification and reporting will be required as defined in Section 4.0. There will be reporting associated with the IEMP while the aquifer remedy is on going. It is anticipated that IEMP reporting requirements and the Office of Legacy Management reporting requirements to support surveillance and maintenance of the site will be integrated. The IEMP is included as Attachment D to the IC Plan.

5.0 RECORDS MANAGEMENT

The retention of records and dissemination of information over the long-term is another critical aspect of legacy management. Records that are needed for legacy management purposes will be managed by the Office of Legacy Management. Records will be dispositioned in accordance with DOE requirements at the National Archives Administration (NARA) or a federal records center for their required retention period or destroyed once they have reached the required retention. Copies of selected records documenting past remedial activities (e.g. CERCLA Administrative Record) will be retained by the Office of Legacy Management for legacy management purposes on the site at the MUEF. In addition, newly acquired CERCLA AR records will be available to stakeholders.

Stewards and stakeholders, whether located in the surrounding community or in remote locations, will require easy access to copies of the CERCLA Administrative Record (AR). It is anticipated that the MUEF will house computing facilities for acquisition and access. With regard to electronic data and information, all data and information required to support legacy management will be identified and transferred to the Office of Legacy Management. The Office of Legacy Management will make the data and information available to the public through a variation of the existing Geospacial Environmental Mapping System (GEMS) computer system, currently in use at the Office of Legacy Management, at www.gjo.doe.gov/LM to track legacy management progress at sites like Weldon Spring. The system to support legacy management addresses the following:

- On-site data transmission, telecommunications, and computing resources requirements
- Data acquisition standards and protocols for newly collected data, and for historical data and images to be transferred to the repository
- Analysis tools, integration with other data sources, and notification services to assist remotely located users
- Electronic data storage requirements
- Data management and validation practices sufficient to ensure defensible information
- Plans for periodic storage infrastructure reviews and upgrades to ensure electronic information is continually available as technology advances
- Integration with any DOE or federally mandated central repository for electronic records or data, as appropriate
- Web based retrieval, search, and reporting capabilities.

Examples of electronic data include environmental sampling and monitoring data, OSDF monitoring data, and soil certification data as well as electronic images, design drawings, and electronic records. This information is required for the purposes of generating required reports, including the CERCLA five-year review, for efficient management of the data collection process, and for public use.

- Documents that are contained in the CERCLA AR will be digitized and made available to the stakeholders.

5.1 TYPES OF DATA REQUIRED FOR LEGACY MANAGEMENT

Data determined critical for legacy management purposes have been divided into four categories: historical data, RI/FS process and results, remediation data, and post-site closure data. Table 5-1 presents the types of information that fall into each category.

Based on the four categories, DOE personnel at the Fernald Site and Fluor Fernald, Inc. personnel have initiated the process of working with stakeholders to identify any records considered critical for legacy management. Interface with stakeholder groups was initiated in the fall of 2002 to ensure that the appropriate types of information and records are being retained to support legacy management. Formal recommendations from the FCAB (FCAB 2002) and ongoing interface with stakeholders will allow DOE to retain the appropriate information to support future legacy management needs.

5.2 LEGACY MANAGEMENT RECORDS CUSTODIAN

The Office of Legacy Management will assume custodianship of the Fernald records when the site is transitioned to Legacy Management. Site records fall under the DOE retention schedules and will remain in the custody of the DOE for the required, pre-established retention period.

5.3 RECORDS STORAGE LOCATION

Fernald records will be stored at Federal Records Center located in Dayton, OH. Records will be transferred to the facility located in Morgantown, West Virginia when construction is completed.

A copy of the CERCLA AR records collection will be stored at the MUEF. The CERCLA AR will be available in both the paper copy and digitized format.

5.4 PUBLIC ACCESS REQUIREMENTS

Documents will be made available to the public. A public reading room will be located at the MUEF. A copy of the CERCLA Administrative Record (AR) will be stored at this location. The CERCLA AR will be available in both paper copy and digitized formats.

Administrative Record documents for the Fernald closure site will be scanned into industry-standard searchable Adobe Acrobat PDF format for viewing over the Internet. Document meta-data is stored in a FileMaker Pro database. The database also contains pointers to the PDF images of the documents.

Features of the pubic access website include a search engine that allows the user to search by document number, document date, document type, document title, description and site. Additionally, the user can search for text contained within the document. Search results can be sorted by document number, document date or document type. Document content is displayed using the Adobe Acrobat Reader software. The CERCLA AR will be updated as new documents are created.

TABLE 5-1

TYPES OF DATA NEEDED TO SUPPORT LEGACY MANAGEMENT ACTIVITIES

DATA CATEGORY	SUMMARY OF INFORMATION REQUIRED
Historical Data	• Real estate records • Information pertaining to acquisition of property • Process documents/reports (summary level) • Cultural Resource records • Photographs (significant for legacy management purposes)
RI/FS Process and Results	• Risk assessments • Public comments • RI/FS reports for each OU • RODs for each OU • ROD amendment documents
Remediation Data	**For soil:** • Design and excavation plans • Documentation of certification process for each area/phase • Certification reports* **For groundwater:** • Pump and treat system design documents • Groundwater monitoring data • Groundwater extraction data • Design and monitoring data for the CAWWT **For Environmental Monitoring:** • IEMP reports* • Regular updates* **For buildings and structures:** • Plans for decommissioning and dismantling buildings and structures **For OSDF:** • Design, construction, material placement and closure documentation • Leak detection/leachate monitoring data • Cover/cap monitoring data **For Restoration:** • Design plans • Implementation documentation • Completion Reports • Monitoring data* **General:** • RD/RA Reports • Aerial photographs taken during remediation processes
Post-Closure Data	• Decision documents on land use • Documents on public-use decision • All monitoring and maintenance data for the OSDF • All monitoring and maintenance data for the restored areas* • All institutional control data • Drawings for remaining facilities (including the OSDF)

*Will require retention of electronic data

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6.0 FUNDING

A preliminary estimate of legacy management costs has been developed and is provided in Appendix A. The estimate assumes the Office of Legacy Management will contract and oversee the maintenance and monitoring work that is required at the Fernald site. These cost estimates will continue to be refined as legacy management progresses. The attached cost estimate provides total legacy management costs over a seven-year period and will be used as the basis for future budget planning for legacy management at the Fernald site.

In general, the attached cost estimate for legacy management activities covers the technical support, monitoring, and maintenance of the Fernald site to ensure compliance with all applicable federal and state requirements for the next seven years. It includes the following:

- Surveillance and maintenance costs, including institutional controls surveillance and maintenance, OSDF cap inspection and maintenance, and ecological monitoring and management;
- Costs for the continuing aquifer restoration management and operation, environmental monitoring, environmental compliance, and reporting, including groundwater remedy and OSDF leak detection program management, environmental sampling, laboratory analysis, data management and analysis, and environmental monitoring and compliance reporting;
- CAWWT well field and leachate transmission system operations; and
- Costs for overhead and project support, including overall project management, health and safety, records management, legal support, information management, finance and accounting, contracts and acquisitions, human resources and industrial relations, general grounds and maintenance activities, and utilities.

The attached cost estimate does not include the cost of Federal employees at the Office of Legacy Management or other government offices required for managing legacy management of the Fernald site. It does not include the costs for pensions and other benefits for eligible former employees of the various site contractors. Also not included are the costs for refurbishing a building (such as the silos warehouse) to be used that might be used post-closure. Significant maintenance items on such a facility are also not included.

Funding for legacy management will need to be secured by DOE in future budget requests for the years after site closure. Currently, it is anticipated that Office of Legacy Management funds will be available for OSDF monitoring, maintenance and leachate management, aquifer remediation, and for ensuring that applicable laws and regulations are adhered to in restored areas. DOE will keep the public informed of its plans to fund legacy management activities as new information becomes available.

Currently, legacy management activities at the various DOE facilities are funded through the annual appropriations process. Funding for sites in the long-term surveillance and maintenance program is maintained in a separate line item in the Office of Legacy Management budget. For the time being, this process for funding legacy management will continue; however the DOE will continue to investigate other funding and management options.

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REFERENCES

Fernald Citizens Advisory Board (FCAB), 2002, "Telling the Story of Fernald – Community-Based Stewardship and Public Access to Information," The Perspectives Group, Alexandria, VA, October.

Florida International University (FIU), 2002, "2006 and Beyond: Defining Long-Term Stewardship Requirements at Fernald," Florida International University, Miami, FL, November.

GeoSyntec, 1997, "Final Design Calculation Package; On-site Disposal Facility," Volume I, Revision 0, prepared for Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH, May.

ICF Kaiser Consulting Group, 1998, "Managing Data for Long-Term Stewardship," Working Draft, prepared for Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH, March.

U.S. Department of Energy (DOE), 2005, "Environmental Protection Program," DOE Order 450.1, Change 1, Washington, D.C., January.

U.S. Department of Energy (DOE), 2006a, "Groundwater/Leak Detection and Leachate Monitoring Plan; On-site Disposal Facility," 20100-PL-009, Revision 2, Final, Fluor Fernald, DOE, Fernald Area Office, Cincinnati, OH, April.

U.S. Department of Energy (DOE), 2006b, "Integrated Environmental Monitoring Plan," 2505-WP-0022, Revision 4, Final, Fluor Fernald, DOE, Fernald Area Office, Cincinnati, OH, January.

U.S. Department of Energy (DOE), 2006c, "Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Project," 2505-OM-001, Revision 2, Final, Fluor Fernald, DOE, Fernald Area Office, Cincinnati, OH, April.

U.S. Department of Energy (DOE), 2006d, "Post-Closure Care and Inspection Plan; On-site Disposal Facility," 20100-PL-010, Revision 3, Fluor Fernald, DOE, Fernald Area Office, Cincinnati, OH, April.

U.S. Department of Energy (DOE), 2006e, "Community Involvement Plan", Office of Legacy Management, September.

U.S. Department of Energy (DOE), 2003, "Radiation Protection of the Public and the Environment," DOE Order 5400.5, Change 2, Washington, D.C., January.

U.S. Department of Energy (DOE), 2002a, "Interim Policy and Actions Regarding Records Management for Closure Sites," DOE, Office of Environmental Management, Office of Long-Term Stewardship.

U.S. Department of Energy (DOE), 2002b, "Master Plan for Public Use of the Fernald Environmental Management Project," 20900-PL-0002, Revision 0, Final, DOE, Fernald Area Office, Cincinnati, OH, June.

U.S. Department of Energy (DOE), 2002c, "Natural Resources Restoration Plan," Draft Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH.

U.S. Department of Energy (DOE), 2001a, "Radioactive Waste Management" DOE Order 435.1, Chg. 1, Washington, D.C., August.

REFERENCES
(Continued)

U.S. Department of Energy (DOE), 2001b, "A Report to Congress on Long-Term Stewardship," Volumes I and II, R-01-025, DOE, Office of environmental Management, Office of Long-Term Stewardship, January.

U.S. Department of Energy (DOE), 2000a, "Institutional Controls in RCRA and CERCLA Response Actions at Department of Energy Facilities," DOE/EH-413-0004, DOE, Office of Environmental Policy and Guidance, August.

U.S. Department of Energy (DOE), 2000b, "Long-Term Stewardship Study," Volumes I and II, Final Study, DOE, Office of Environmental Management, Office of Long-Term Stewardship, October.

U.S. Department of Energy (DOE), 2000c, "Memorandum: Long-Term Stewardship 'Guiding Principles,'" DOE, Ohio Field Office, Miamisburg, OH.

U.S. Department of Energy (DOE), 1999a, "From Cleanup to Stewardship – A Companion to 'Accelerating Cleanup: Path to Closure' and Background Information to Support the Scoping Process Required for the 1998 PEIS Settlement Study," DOE, Office of Environmental Management, October.

U.S. Department of Energy (DOE), 1999b, "The Long-Term Control of Property: Overview of Requirements in Orders DOE 5400.1 and DOE 5400.5," Information Brief, EH-412-0014/1099, DOE, Office of Environmental Policy and Guidance, October.

U.S. Department of Energy (DOE), 1998a, "Accelerating Cleanup: Paths to Closure," DOE, Office of Environmental Management, June.

U.S. Department of Energy (DOE), 1998b, "Environmental Assessment for Proposed Final Land Use at the Fernald Environmental Management Project," Revision 1, DOE, Fernald Area Office, Cincinnati, OH, July.

U.S. Department of Energy (DOE), 1998c, "Historical Documentation of Facilities and Structures at the Fernald Site," 20900-RP-0002, Revision 0, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH, January

U.S. Department of Energy (DOE), 1998d, "Historical Documentation of the Fernald Site and Its Role within the U.S. Department of Energy's Weapon Complex," Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH.

U.S. Department of Energy (DOE), 1998e, "Site-wide Excavation Plan," 2500-WP-0028, Revision 0, Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH, July.

U.S. Department of Energy (DOE), 1996a, "Final Record of Decision for Remedial Actions at Operable Unit 5," 7478 U-007-501.4, Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH, January.

U.S. Department of Energy (DOE), 1996b, "Information Management Program," DOE Order 200.1, Washington, D.C., September.

U.S. Department of Energy (DOE), 1996c, "Land and Facility Use Planning," DOE Policy 430.1, Washington, D.C., July.

REFERENCES
(Continued)

U.S. Department of Energy (DOE), 1995a, "Final Record of Decision for Remedial Actions at Operable Unit 2," 7021 U-004-501.3, Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH, May.

U.S. Department of Energy (DOE), 1995b, "Life Cycle Asset Management," DOE Order 430.1 Washington, D.C., August.

U.S. Department of Energy (DOE), 1995c, "Pre-design Investigation and Site Selection Report for the On-site Disposal Facility," Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH, July.

U.S. Department of Energy (DOE), 1994, "Memorandum: The Secretary of Energy's Land and Facility Use Policy," December 21.

U.S. Department of Energy (DOE), 1993, "Site-wide Characterization Report," Final, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, OH, May.

U.S. Department of Energy (DOE), 1992a, "American Indian Tribal Government Policy," DOE Order 1230.2, Washington, D.C., April.

U.S. Department of Energy (DOE), 1992b, "Site Development Planning," DOE Order 4320.1B, Change 1, Washington, D.C., June.

U.S. Environmental Protection Agency (EPA), 2000, "A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups," U.S. EPA 540-F-00-005, OSWER 9355.0-784FS-P, U.S. EPA , Office of Solid Waste and Emergency Response, September.

APPENDIX A

SUMMARY LEGACY MANAGEMENT BUDGET ESTIMATE

SUMMARY LEGACY MANAGEMENT BUDGET ESTIMATE

SURVEILLANCE AND MAINTENANCE	Apr 06-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10	Oct 10-Sep 11	Oct 11-Sep 12	TOTAL
INSTITUTIONAL CONTROLS SURV. AND MGT.	122,473	260,045	276,041	293,039	311,109	330,251	350,606	1,943,564
OSDF CAP INSPECTION AND MAINTENANCE	95,000	195,700	201,571	207,618	213,847	220,262	226,870	1,360,868
ECOLOGICAL MONITORING AND MANAGEMENT	506,763	318,520	331,463	345,016	359,205	374,035	389,582	2,624,583
TOTAL	724,236	774,266	809,075	845,673	884,160	924,548	967,058	5,929,015
AQUIFER RESTORATION MGT, ENVIRO. MONITORING, ENVIRO. COMPLIANCE, AND REPORTING								
GW REMEDY/OSDF LEAK DETECTION PROGRAM MGT.	245,011	521,970	439,778	466,853	495,639	526,138	558,561	3,253,950
ENVIRONMENTAL SAMPLING	489,665	637,369	651,066	691,159	733,782	805,298	826,364	4,834,703
LABORATORY ANALYSIS	904,149	914,097	936,670	1,019,195	1,020,526	1,772,797	1,142,798	7,710,231
DATA MANAGEMENT AND EVALUATION	515,334	715,447	642,090	681,622	659,480	700,086	743,217	4,657,275
ENVIRO. MONITORING/COMPLIANCE, REPORTING, AND PROGRAM MANAGEMENT	507,492	1,019,826	921,359	857,719	911,107	967,195	1,026,796	6,211,495
TOTAL	2,661,650	3,808,710	3,590,964	3,716,548	3,820,533	4,771,514	4,297,735	26,667,654
CAWWT, GROUNDWATER EXTRACTION WELL FIELD OPERATIONS AND THE OSDF LEACHATE TRANSMISSION SYSTEM								
TOTAL	1,834,603	3,895,180	4,134,988	4,489,758	4,659,970	4,946,896	8,162,503	32,123,896
OVERHEAD AND PROJECT SUPPORT								
PROJECT MANAGEMENT	196,071	381,798	418,104	440,675	459,602	474,957	496,844	2,868,053
HEALTH AND SAFETY	196,581	284,682	302,203	320,808	340,579	361,551	383,810	2,190,212
RECORDS MANAGEMENT	74,509	155,828	162,987	170,495	178,411	186,735	195,486	1,124,451
LEGAL SUPPORT	143,429	298,207	310,070	322,469	335,420	348,971	363,138	2,121,705
INFORMATION MANAGEMENT	226,532	217,998	231,310	265,024	260,330	276,136	315,268	1,792,599
FINANCE AND ACCOUNTING	109,134	231,701	245,978	261,116	277,204	294,294	312,404	1,731,830
CONTRACTS AND ACQUISITIONS	102,684	213,167	221,379	230,059	239,223	248,889	259,110	1,514,510
HUMAN RESOURCES AND INDUSTRIAL RELATIONS	50,428	107,063	113,658	120,674	128,096	135,992	144,362	800,272
GENERAL GROUNDS AND MAINTENANCE	328,516	686,055	724,515	765,315	808,622	854,592	903,387	5,071,002
TOTAL	1,427,884	2,576,498	2,730,203	2,896,637	3,027,487	3,182,116	3,373,810	19,214,634
GRAND TOTAL LEGACY MANAGEMENT*	6,648,372	11,054,653	11,265,230	11,948,616	12,392,150	13,825,074	16,801,105	83,935,199

*Grand total does not include pension and benefits